

REMARKS/ARGUMENTS

Claims 1-4, 8-18, 20, 32-39, 46-49, 51-57, 59-62, 65 and 66 are pending. Claims 1, 8, 51-53 and 59-62 are amended. Claims 58, 63, 64 and 67 are hereby canceled without prejudice or disclaimer.

Claims 1, 8, 14, 15, 37-39, 51-53, 65 and 66 are under consideration, however it is noted that although Applicants indicated that claims 13, 54-57 and 59-62 are also readable on the elected species, the Office Action nevertheless withdrew these claims. To traverse the election of species requirement, and additionally the withdrawal of claims readable upon the elected species, a petition is filed concurrently herewith. Hopefully the petition is moot, because as discussed in further detail below, it is submitted that all claims are now in condition for allowance.

Initially, in response to the June 4, 2009 Office Action, Applicants additionally submit that the finality of the Office Action was improper. In particular, the Office Action includes new grounds of rejection and objection, which are clearly not necessitated by Applicants' amendments. Specifically, the June 4, 2009 Office Action withdrew the rejection based upon the GB 2242563 reference, and instituted a new rejection based upon newly cited USP 5,059,494 to Vartanian, and alleges that the new grounds of rejection were necessitated by Applicants' amendment. However, the GB '256 reference was utilized in rejecting only claim 1 previously, and yet the Vartanian reference was newly cited and relied upon to reject numerous claims. Further, among the claims rejected based upon the Vartanian reference is, for example, claim 52. Claim 52 was amended only to render moot a rejection under 35 USC §112, in that a prior Office Action considered "oxidative" to be more appropriate than the term "oxygen." Clearly, the change of "oxygen" to -- oxidative -- was not an amendment that necessitated the new prior art grounds of rejection, but rather, it was a supplemental search by

the examiner and a decision to institute new grounds of rejection for many claims based upon the Vartanian reference. Accordingly, it is submitted that the rejections of the Office Action were not necessitated by Applicants' amendment, especially as to claim 52 and therefore, the Office Action should not have been made final.

An additional reason for which the Office Action should not have been made final is that the Office Action additionally includes a new objection to claims 8 and 51, alleging (bottom of p. 4 of the Office Action) that the claims were substantial duplicates. Applicants respectfully disagree with this assertion, however, the assertion is also rendered moot by the amendments herein. Notably, with respect to whether the Office Action was properly made final, it is submitted that this new objection was also not necessitated by any of the Applicants' amendment. Claim 51 was not amended in response to the July 15, 2008 Office Action or the March 2, 2009 Office Action, and the only amendment made to claim 8 was rewriting claim 8 in independent form -- which thus did not alter the scope of claim 8. Accordingly, the objection to claims 8 and 51 was certainly not necessitated by Applicants' amendment, and Applicants should be permitted to submit amendments to correct such a newly raised objection, and therefore, for this additional reason the Office Action should have not been made final.

Because the Office Action should not have been made final, it is submitted that entry of the amendments set forth herein is proper. Should the Examiner not withdraw the finality of the Office Action, it is respectfully requested that this paper be treated as a petition traversing the finality of the Office Action, and submitted for review as such a petition based upon the above arguments.

Additionally, it is submitted that entry of the present amendments is proper as placing the application in condition for allowance.

Regarding the objection to claims 8 and 51, although Applicants disagree, in view of the amendments herein, it is submitted that the objection is rendered moot.

Turning to the rejections based on the prior art, the Office Action rejected claims 1, 14, 37-39, 52, 53, 58, 63-65 and 67 as anticipated by Vartanian. Further, claims 1, 8, 14, 15, 51-53, 58, 63-65 and 67 were rejected as obvious in view of Joerissen in view of Boneberg. In addition, claims 15 and 66 were rejected as obvious in view of Vartanian and Hallum. For the reasons set forth in detail below, it is respectfully submitted that this application is now in condition for allowance.

Before discussing in further detail the claims at issue, and their respective rejections, Applicants address the remarks at pages 3-4 of the Office Action. Regarding the comments as to the alleged “attacking references” individually, it is respectfully submitted that the Office Action improperly fails to consider the teachings of the references themselves, as required by the Supreme Court decision in *KSR*. Applicants arguments do not attack one reference while ignoring teachings of another, but rather, consider each of the respective teachings of the references. Indeed, the combination of Joerissen and Boneberg is an excellent example. As discussed further hereinafter, the Office Action relies upon Boneberg for features relating to mixing, with the mixing taking place in order to thermally burn the hydrogen-off gas and oxygen-off gas. By contrast, in accordance with features of the invention set forth in certain claims discussed hereinafter, the gas control is so as to avoid ignition. Thus, Applicants are not improperly considering the references in isolation, but rather, as set forth in Applicants’ response filed December 15, 2008, even if the references were to be combined as asserted in the Office Action, the present invention would not result. Even the combined references fail to disclose or suggest controlling gas flow so as to avoid or

reduce the possibility of ignition -- because even if combined, Boneberg would lead one to enhance ignition.

Moreover, the Office Action incorrectly characterizes col. 3, lines 32-45 of Boneberg as describing that “only cathode and anode exhaust enters the mixing portion.” And then acknowledges that, at col. 3, lines 46+ it is disclosed that methanol can optionally be added. However, these comments miss the point. Specifically, the optional use of methanol demonstrates that Boneberg provides an arrangement which functions to promote thermal burning, whereas with the present invention, the gas flow is controlled to avoid ignition. Moreover, present claim 52 recites that only the oxidative-off gas and hydrogen-off gas are supplied to the mixing portion, and the Office Action acknowledges that at least under some circumstances, methanol is additionally provided in Boneberg.

Finally, the Office Action at p. 4 asserts that the burden is upon Applicants to prove that the prior art is “not capable of the functional language recited in the claims.” Such an assertion is utterly incorrect. The burden is upon the Examiner to establish a *prima facie* basis for anticipation or obviousness. Moreover, to establish such a basis for anticipation or obviousness, the Examiner must establish that the art does in fact perform the claimed functions, not merely that the art could be capable being operated to perform the claimed functions. As the Federal Circuit recognized in *K-2 v. Salomon*, 52 USPQ2d 1001, 1004 (Fed. Cir. 1999) (emphasis added):

The functional language is, of course, an additional limitation in the claim.

Moreover, in *In re Mills*, 16 USPQ2d 1430 (Fed. Cir. 1990), the Federal Circuit reversed the decision of the PTO Board which opined that it was sufficient if a prior art reference was merely “capable of” being operated according to the functional language of the

claim at issue. In *Mills*, the Federal Circuit recognized the Board's argument as (emphasis added):

The Board stated: 'In our opinion, the differences between claim 6 in the Mathis [prior art] machine ... ***lie solely in the functional language of the claim.***' ... The Board concluded at this point: 'We are of the opinion that the Mathis [prior art] machine is ***capable of being operated*** in such a fashion so as to cause [the output] pump 18 to draw air into the mixing chamber 17'

16 USPQ2d at 1432. The Federal Circuit rejected the proposition of the PTO Board that it is sufficient where a prior reference could be capable of operating or was capable of being modified to run in a manner claimed. *Id.* at 1432. Thus, contrary to the assertions in the Office Action, the Federal Circuit recognized the burden is on the PTO to establish more than the prior art is merely "capable of" performing the claimed function, the PTO must establish that the prior art did in fact perform the function. The assertion that the burden is upon Applicants to establish the prior art is incapable of performing the claimed function is erroneous. Here the Office Action provides no support for the assertion that the prior art indeed performs the claimed function. If anything, the teachings of the art are contrary to the claimed function. Moreover, attempt to shift the burden to present evidence supporting a rejection from the PTO to the Applicants is in error. Where the PTO present insufficient evidence (and indeed contrary evidence), it is not Applicants' burden to prove the prior art is "incapable" of performing the claimed function.

In addition, with respect to Joerissen, as Applicants previously pointed out, modification of Joerissen based upon Boneberg as asserted in the Office Action would indeed be contrary to the teachings of Joerissen, and thus, the proffered combination is contrary to the teachings of the references. Instead of being based upon the teachings of the references, the allegation of obviousness is improperly based upon Applicants' own disclosure. As

clearly set forth at p. 10 of the translation of Joerissen, Joerissen desires to minimize the discharge of hydrogen and utilize 100% of the hydrogen, whereas by contrast, Boneberg desires to provide sufficient hydrogen in order to provide a thermal burn (and if the amount of hydrogen is not sufficient, by adding methanol).

Applicants do not argue the references “individually” as asserted in the Office Action. Rather, consideration of the teachings as a whole demonstrates that: (1) one skilled in the art would not combine the teachings as asserted in the Office Action because they are directed to different purposes and objectives with respect to each other, the references are combined by ignoring their teachings and instead utilizing Applicants’ own disclosure, and (2) even if the references were to be combined, the present invention would not result, because the control of gas flow in accordance with the present invention is to avoid ignition, whereas Boneberg desires to have a thermal burn.

Turning now further to the features of the present claims and their respective rejections, claim 1 is amended to further clarify that the control portion controls feeding of the hydrogen-off gas and oxygen-off gas to the mixing portion so that the proportion of hydrogen-off gas fed to the mixing portion is sufficiently diluted such that the exiting mixture avoids ignition. Because claim 1 is amended to include features previously set forth in claim 58, claim 58 is also canceled. Further, claim 1 is additionally amended to even further clarify that the control portion controls the feeding of the gases to avoid ignition.

As noted above, one skilled in the art would not combined Joerissen and Boneberg, absent Applicants’ own disclosure, because the teachings of the references are inconsistent with each other -- Joerissen desires to utilize substantially all of the hydrogen and minimize hydrogen discharge, while Boneberg desires to provide a sufficiently rich mixture (with hydrogen or supplemental methanol) for a thermal burn. Moreover, even if combined, there

is no teaching as to controlling of the gas flow to a mixing portion to provide a sufficiently diluted mixture such that it will avoid ignition.

Further, Vartanian also fails to disclose or suggest a control portion which controls gas flow to avoid ignition. Vartanian is concerned with controlling pressures so that large differential pressures which could be damaging to a differential pressure sensor 6 are avoided. Vartanian provides no disclosure or suggestion as to controlling gas flows to avoid ignition.

Claim 8 also includes the feature in which the control portion controls gas flow to avoid ignition.

Regarding claim 8, as noted above, one skilled in the art would not combine Joerssen and Boneberg as asserted in the Office Action, because their teachings are inconsistent with each other. Further, even if combined, the present invention would not result, because neither reference teaches controlling gas flow so that the hydrogen-off gas is sufficiently diluted to avoid ignition.

With respect to Vartanian, the Office Action did not rely upon Vartanian in rejecting claim 8, apparently recognizing the inapplicability of Vartanian, because in Vartanian the valve system is positioned inside of the recirculation loop, whereas claim 8 recites that the fifth flow passage (that connects to the fourth flow passage, the hydrogen supply passage) connects to a location between the exhaust port and the valve, and thus the valve is outside of the loop. Claim 8 is further amended to more clearly recite this feature by reciting that hydrogen-off gas which passes through the valve exits the system without further passing through the fuel cell. By contrast, with Vartanian, the valve is positioned within the recirculation loop. Moreover, as noted earlier, Vartanian provides no teaching as to

controlling of gas flow so that hydrogen is sufficiently diluted in a mixing portion to avoid ignition.

Claim 51 is amended to include features that are also set forth in dependent claim 15. The Office Action did not rely upon Vartanian in rejecting claim 51 -- as with claim 8, recognizing the inapplicability of Vartanian because Vartanian provides a valve within a recirculation loop. With the additional feature now in claim 51 (also set forth in dependent claims 15), the control portion controls opening of the valve so that the valve is opened in response to determination of a drop in the hydrogen-off gas below a reference concentration. This feature is also disclosed or suggested in Vartanian.

This feature is also not disclosed or suggested by Joerissen and Boneberg. As noted earlier, one skilled in the art would not combine their teachings, as they are inconsistent with each other. Further, even if the references were combined as suggested in the Office Action, the desire would be to utilize hydrogen in a thermal burn, which would be inconsistent with controlling opening of valve such that the valve is opened when the hydrogen concentration is detected to be below a reference concentration.

In rejecting claim 15, the Office Action relied upon the combination of Vartanian and Hallum. However, as noted above, Vartanian is inapplicable to claim 51. Further, Hallum is directed toward detecting the difference in gas content between an inlet's stream and an outlet's stream to control the flow through the fuel cell to be within a more optimal range. Hallum does not teach controlling opening of a valve through which hydrogen-off gas exits a system so that the valve is opened in response to a concentration of hydrogen in the discharged hydrogen-off gas being below a reference concentration. Hallum is concerned with maintaining a desired differential concentration across the fuel cell. Hallum is not concerned with utilizing a hydrogen concentration in a hydrogen-off gas in order to control

opening of a valve through which hydrogen-off gas is discharged from the system. Thus, even if Hallum were somehow combinable with the other references, the present invention would not result, and it is submitted that any such combination of the multiple references would also suffer additional deficiencies with respect to the combined features set forth in claim 51.

Claim 52 also includes the features discussed earlier, in which a control portion controls opening and closing of the valve, with hydrogen-off gas passing through the valve exiting the system without further passing through the fuel cell (contrary to Vartanian), and further, in which the control portion controls of hydrogen-off gas fed to the mixing portion to avoid ignition. As discussed earlier, such features are not disclosed or suggested by the cited references.

Finally, claim 53 also includes the feature discussed earlier with respect to claim 51 in which the valve is controlled to open and discharge hydrogen-off gas from the system in response to a determination that the concentration of hydrogen in the hydrogen-off gas is below a predetermined level. Such features are not suggested by the cited references. Claim 53 is also amended to include the feature in which hydrogen-off gas which passes through the valve exits the fuel system without further passing through the fuel cell (which, again, is contrary to the teachings of Vartanian).

In view of the foregoing, it is respectfully submitted that each of independent claims 1, 8 and 51-53 patentably distinguishes over the cited references. The dependent claims are therefore allowable for at least the same reasons. In addition, it is submitted that the dependent claims recite additional features which are not disclosed or rendered obvious by the cited references.

A Notice of Allowance for claims 1, 4, 8-18, 20, 32-39, 46-49, 51-57, 59-62, 65 and 66 is earnestly solicited.

Should the Examiner deem that any further action is necessary to place this application in even better form for allowance, he is encouraged to contact Applicants' undersigned representative at the below listed telephone number.

Respectfully submitted,

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